

# page 137, numbers 19, 21, 23, 40 - 45

19)  $s(t) = t^2 - 3t + 2$

a)  $\Delta s = s(5) - s(0) = 12 - 2 = 10 \text{ m}$

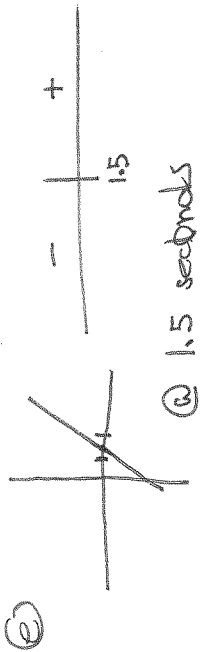
b) Avg Velocity =  $\frac{\Delta s}{\Delta t} = \frac{s(5) - s(0)}{5 - 0} = \frac{10}{5} = 2 \text{ m/sec}$

c)  $V(t) = 2t - 3$

$V(4) = 2(4) - 3 = 5 \text{ m/sec}$

d)  $a(t) = 2 \text{ m/sec}^2$

$a(4) = 2 \text{ m/sec}^2$



f) @ 1.5 seconds

$s(1.5) = t^2 - 3t + 2 = 1.5^2 - 3(1.5) + 2 = 2.25 - 4.5 + 2 = -\frac{1}{4} \text{ m}$

20)  $s(t) = (t-2)^2(t-4)$

a)  $V(t) = s'(t) = 2(t-2)(t-4) + (t-2)^2(1)$   
 $= 2(t^2 - 6t + 8) + (t^2 - 4t + 4)$   
 $= 2t^2 - 12t + 16 + t^2 - 4t + 4$   
 $= 3t^2 - 16t + 20$

b)  $a(t) = 6t - 16$

c)  $V(t) = 0$

$3t^2 - 16t + 20 = 0$

$(3t-10)(t-2)$

$t = \frac{10}{3} = 3.3 \text{ seconds}$      $t = 2 \text{ seconds}$



a) 0 seconds  $\rightarrow s(0) = (-2)^2(-4) = 4(-4) = -16 \text{ m}$

b) 2 seconds  $\rightarrow s(2) = 0 \text{ m}$

c) 3.3 seconds  $\rightarrow -1.185 \text{ m}$